



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,793	08/18/2003	Rui-Hui Wen	10573-US-PA	1792

31561 7590 08/21/2006

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER

KORNAKOV, MICHAIL

ART UNIT PAPER NUMBER

1746

DATE MAILED: 08/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/604,793		WEN, RUI-HUI	
	Examiner		Art Unit	
	Michael Kornakov		1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/01/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-18 in the reply filed on 06/01/2006 is acknowledged. Claims 19-22 are cancelled. Claims 1-18 are examined on the merits.

Specification

2. The disclosure is objected to because of the following informalities:

- paragraph 0035 recites "wafer **carrierbeam104**". Apparently, the wafer carrier beam 104 is indicated. Appropriate correction is required.
- paragraph 0033 recites "a wafer carrier shelf 104". Paragraph 0035 recites "wafer carrier beams 104", thus using the same reference number for different parts.

Appropriate correction is required.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show a wafer carrier shelf as described in the specification, paragraph 0033. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures

Art Unit: 1746

appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recited in claim 2 "wafer carrier beam" constitutes an indefinite subject matter, because it is not clear what is regarded as carrier beam. It is also not clear how the said beam is extended through the wall of the chamber to rotate freely, as per the instant claim 3 and how the rotating handle is

Art Unit: 1746

attached to the beam, as per claim 4. The instant disclosure does not provide clear understanding of such structural limitations and, therefore, additional clarification is required. Claims 5-7 are rejected because of their dependency and failure to remove the ambiguity of parent claims. For examination purposes the term "carrier beam" is given the broadest interpretation.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1,8,10, 13, 14, 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Jacobs et al (U.S. 3,489,608).

Jacobs teaches a system for wafer processing. The system of Jacobs comprises a chamber having an upper part and a lower part, wherein the upper part accommodates a wafer carrier and the lower part has a funnel shape 34 and includes drain opening 36; liquid spraying apparatus B, having a number of nozzles C, evenly disposed at a top portion of the chamber; liquid supplying sources (tanks) connected to the spraying apparatus to provide liquids to respective nozzles of liquid spraying apparatus. Each nozzle of Jacobs is also connected to a source of air (reads on "fluid", as instantly claimed). Jacobs specifically indicates a cleaning nozzle C1, which is identical to the other nozzles and used for spraying a cleaning solution into the

Art Unit: 1746

chamber. Jacobs also teaches nodules 187, 188, 189 and pins 106, disposed between the wafer carrier and rotating shaft and used for the proper adjustment of wafer carriers (Fig. 2,8; col. 4, lines 10-15; col.5, lines 42-70; col.7, lines 22-34; paragraph, bridging col.9 and 10). Therefore, all the structural elements of the apparatus as instantly claimed are recited by Jacobs.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 9, 11, 12, 16, 17, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al (U.S. 3,489,608) in view of Tomita et al (U.S. 5,634,980).

Jacobs does not specifically indicate temperature adjustment devices associated

Art Unit: 1746

with respective liquid/fluid sources to control temperatures of different processing liquids/fluids. However, such temperature adjustment devices are known in the art. Thus, Tomita teaches similar wafer processing apparatus, wherein heating means are utilized for preliminary heating the processing fluids in storage tanks, thus accelerating the processing of semiconductor substrates (col.5, lines 10-15). Therefore, one skilled in the art motivated by Tomita would have found obvious to utilize heating means for preliminary heating the processing fluids within fluid sources in order to enhance and accelerate processing of semiconductor wafers utilizing the apparatus of Jacobs.

11. Claims 1, 8-13, 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al (U.S. 5,634,980).

Tomita teaches semiconductor washing apparatus comprising a chamber having an upper part and a lower part, wherein the upper part accommodates a wafer carrier and the lower part includes drain openings; a wafer carrier; liquid spraying apparatus 22 (Fig. 6), disposed at a top portion of the chamber; liquid supplying sources with temperature adjusting means (2, 5) connected to spraying means (Fig 1; col. 4; col.5). The apparatus of Tomita differs from the instantly claimed system by having the chamber with vertical side walls versus a funnel shape as instantly claimed. However, the court held that the configuration of the claimed apparatus is a matter of choice, which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration (funnel shape) of the claimed apparatus is significant, consult *In re Dailey*, 357 F. 2d 669,149 USPQ 47 (CCPA 1966).

With regard to claim 8, the embodiment of Fig. 1 provides two nozzles.

With regard to claim 10, Tomita teaches cleaning nozzles 15, 16 for spraying a cleaning solution/fluid into the chamber and therefore the cleaning solution/fluid supply source (apparatus) is inherently present within the teaching of Tomita.

With regard to claims 11, 12, Tomita remains silent about temperature adjustment device to control the temperature of cleaning solution/fluid. However, one skilled in the art would have found obvious to utilize such device, as suggested by Tomita for liquid supplying sources 2 and 5, in order to enhance and accelerate cleaning inside surfaces in the apparatus of Tomita.

With regard to claim 13, Tomita remains silent about a moving device, which moves the spraying apparatus. However, such devices are commonly utilized in the art in order to move the spray head along the wafer surface and one skilled in the art would have found obvious to utilize such device within the apparatus of Tomita in order to efficiently cover the wafer surface with processing solution. With regard to the limitations of claim 13, reciting funnel shape of the lower part of the chamber, cleaning solution/fluid supply apparatus and the limitations of claims 17 and 18, these limitations have already been addressed above with respect to claims 1, 10 and the same rationale is applied here.

12. Claims 2, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al (U.S. 5,634,980) in view of Nonomura et al (U.S. 5,601,645).

Tomita remains silent about the specificities of wafer carrier, including a plurality

Art Unit: 1746

of wafer carrier beams comprising wafer anchoring pins disposed on a peripheral surfaces of the wafer carrier beams. However, such structural elements are utilized in the art for supporting the wafer during processing. Thus, Nonomura describes substrate spin treating apparatus comprising substrate holder having cylindrical shanks (5a) (reads on "beams", as instantly claimed) and projections 5c (reads on "anchoring pins", as instantly claimed) disposed on top (peripheral) surfaces of the shanks (Fig. 3, 5; col. 6, 7). Nonomura specifically indicates that such holder structure facilitates transport of wafers while preventing mist produced during upper surface treatment from adhering to the lower surface of the substrate. Therefore, one skilled in the art motivated by Nonomura would have found obvious to utilize the shanks and pins of Nonomura in order to facilitates transport of wafers and prevent mist adhering to their lower surface while treating the wafer in the apparatus of Tomita.

Allowable Subject Matter

13. Claims 3-5, 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

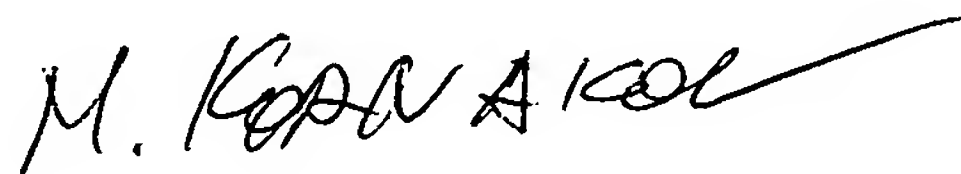
14. The following is a statement of reasons for the indication of allowable subject matter: no other prior art that anticipates or suggests fairly the apparatus with the combination of structural elements as instantly recited has been located as of the date of this office action.

Art Unit: 1746

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael Kornakov
Primary Examiner
Art Unit 1746

08/17/2006